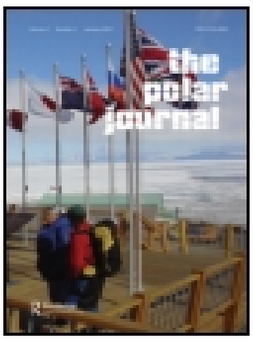

The Polar Journal

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rpol20

Russia's policy to develop trans-arctic shipping along the Northern sea route

Sergey Sevastyanov & Aleksey Kravchuk

To cite this article: Sergey Sevastyanov & Aleksey Kravchuk (2020): Russia's policy to develop trans-arctic shipping along the Northern sea route, The Polar Journal, DOI: 10.1080/2154896X.2020.1799609

To link to this article: https://doi.org/10.1080/2154896X.2020.1799609

Published online: 25 Aug 2020.

Submit your article to this journal

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=rpol20

THE POLAR JOURNAL
https://doi.org/10.1080/2154896X.2020.1799609

Routledge
Taylor & Francis Group

ARTICLE

Check for updates

Russia's policy to develop trans-arctic shipping along the Northern sea route

Sergey Sevastyanov [a] and Aleksey Kravchuk [b]

[a]International Relations Department Oriental Institute, School of Regional and International Studies, Far Eastern Federal University (FEFU), Vladivostok, Russia; [b]Asia Pacific International Institutions & Multilateral Cooperation Studies Center, Oriental Institute, School of Regional and International Studies, Far Eastern Federal University (FEFU), Vladivostok, Russia

ABSTRACT

This article explores changing transport-logistic capabilities of the Northern Sea Route (NSR) and Russia's policy to further develop them. The authors begin with a study of latest changes in the NSR management system in Russia, and characterise a series of systemic measures undertaken by Moscow over the last decade to improve the transport potential of the NSR. They also assess Russia's key actors, their economic interests and projects in the Arctic, emphasising that large scale energy and infrastructure development projects have become catalysts to accelerate development of the NSR. However, the main research issue of this paper is to determine the most optimal conditions for the NSR utilisation that could ensure time and cost savings for shipping carriers. According to the authors, the key obstacle to successful development of trans-Arctic shipping is the lack of an economically effective model to organise it along the NSR. In this regard, the main research thesis that the authors are trying to prove is that the application of the concept of shuttle transportation between two large logistic hubs, built on the basis of the ports of Murmansk and Petropavlovsk-Kamchatsky will create optimal conditions for trans-Arctic shipping along the NSR. Another research issue for this paper is to assess the prospects of the NSR as an international transport line. For this purpose, recent trends in Arctic shipping and the prospective for international cooperation in the implementation of major LNG extraction and transport-logistic projects in the Arctic have been analysed.

KEYWORDS

Russia's Arctic policy; the Northern Sea Route; shuttle transportation model

Introduction

Over the past several decades, the Arctic has become an important topic on the international agenda, not only for regional states, but also for countries that are geographically remote from this part of the world. The heightened interest of the world community towards the Arctic could be explained by at least two key macro factors: firstly, the Arctic

CONTACT Sergey Sevastyanov ssevastyanov@hotmail.com St. Peterburg School of Social Sciences and Oriental Studies, National Research University Higher School of Economics, St. Peterburg, Russia.

The current affiliation of Sergey Sevastyanov is St. Peterburg School of Social Sciences and Oriental Studies, National Research University Higher School of Economics

© 2020 Informa UK Limited, trading as Taylor & Francis Group

coast, waters and shelf of its seas contain significant reserves of natural resources; and secondly, the climatic transformations of the region have created favourable conditions for the use of sea lanes connecting the largest trade zones of America, Europe and Asia.

This research is related to the second factor and devoted to an assessment of transport-logistic capabilities of the Northern Sea Route (NSR) and Russia's policy to develop them. Thus the first research issue for this paper is to assess the key Russia's actors and their interests in the Arctic. For this purpose authors clarify latest changes in the NSR management system in Russia, and characterise a series of systemic measures undertaken by Moscow over the last decade to improve the transport potential of the NSR. Besides, they prove that lately Russia's large-scale energy and infrastructure development projects have become catalysts to accelerate development of the NSR.

However, in this work the authors do not set a task to study the economic attractiveness of the NSR in comparison with traditional sea routes (via the Suez or Panama Canals). By now, Russian and foreign scholars have published many papers devoted to the calculation of the NSR's economic capabilities, and they still could not develop a common position on this issue. The literature research demonstrates that their forecasts and conclusions have often been opposite – from sharply negative (e.g. Moe and Jensen, Storey, Inozemcev, Hansen et al., Pruyn),[1] to very optimistic (e.g. Xu et al., Furuichi and Otsuka, Lukin, Engdahl).[2] Despite the fact that the NSR is the shortest way between Asia and Europe, some experts rightly emphasise that reducing the distance by 40% does not always ensure a proportional reduction in time and cost of transportation.[3] But the main shortcoming of the NSR, which so far does not allow it to become a global route, is the seasonality of its use due to the difficult weather and ice conditions in the seas of the Arctic Ocean.[4]

According to the authors, the key obstacle to successful development of trans-Arctic shipping is the lack of an economically effective model to organise it along the NSR, while the main research issue of this work is to determine the most optimal conditions for the NSR utilisation that could ensure time and cost savings for shipping carriers. In this regard, the main research thesis of the work is that the application of the concept of shuttle transportation between two large logistic hubs, built on the basis of the ports of Murmansk and Petropavlovsk-Kamchatsky, will create optimal conditions for trans-Arctic shipping along the NSR.

Finally, the trend towards increased trade between Europe and Asia indicates that in the near future more states will begin to show interest in the Arctic shipping. Thus, the role of and perspectives for international cooperation in the implementation of major liquefied natural gas (LNG) extraction and transport-logistic projects in the Arctic is also analysed in this paper.

[1] Moe and Jensen, "Opening of New Arctic Shipping Routes"; Storey, "Russia's Arctic shipping ambitions"; Inozemcev, "Absurd Investments"; Hansen et al., "Arctic Shipping: Commercial Opportunities and Challenges"; and Pruyn, "Will the Northern Sea Route ever".

[2] Xu et al., "The potential seasonal alternative of Asia-Europe"; Furuichi and Otsuka, "Cost Analysis of the Northern Sea Route"; Lukin, "Analiz deiatel'nosti Severnogo morskogo"; Engdahl, "Huge Implications of Russia's Northern Sea Route".

[3] Liu and Kronbak, "The potential Economic Viability of Using".

[4] Brigham, "The Arctic waterway to Russia's economic future".

Theoretical framework

The development strategies of the Arctic zone of the Russian Federation (AZRF), which would be analysed in more details further in the text, are aimed at realisation of Russia's national interests in the Arctic. It can be achieved by a comprehensive build-up of competitive advantages of the AZRF that would allow: to strengthen Russia's position in the region, to ensure international security, and to intensify international cooperation.[5] The main topic of this paper is to study active economic policy of the Russian state aimed at realisation of its national interests in the Arctic, and thus the best theory to explain those issues is 'economic realism' developed by Robert Gilpin and his followers.[6]

However, to characterise Russian policy in the Arctic, including ways and means of the NSR development, we could not rely on just one paradigm of international relations, but have to apply an eclectic perspective. To study practical aspects of the NSR development, the authors also use neoliberal theory of neofunctionalism proposed by E. Haas.[7] It is very helpful to explain the policy of the Russian Government taking advantage of the recently started LNG production in the Arctic that, based on a 'spill-over effect', is making favourable conditions for development in other economic sectors (infrastructure, logistics, shipbuilding, etc.) in this region and even in the neighbouring Russian Far East (RFE). Same theory is useful to explain models of cooperation that have been recently formed by Russian companies with Japanese and Korean partners in the Arctic. As far as Russia's strengthening cooperation with China in the Arctic and the RFE, especially in the energy field, this phenomenon, with some assumptions, may be characterised by another neoliberal theory of complex interdependence.[8]

Besides, according to the authors, one of the key obstacles to successful development of trans-Arctic shipping is the lack of an economically effective model to organise shipping along the NSR. To analyse the functioning and perspectives of the Russian transport system in the Arctic, a structural-functional approach is applied.

Russia's key actors, economic interests and projects in the Arctic

The geopolitical position of the RF is unique. Russia is located in the east of Europe and in the north of Asia, occupying about one-third of the territory of the Eurasian continent. However, the advantages of such a geographical position are quite contradictory. On the one hand, 'Russia remains the most extensive transcontinental state with a powerful belt of neighboring countries and with a transitional position between Europe and Asia',[9] which allows it to fulfill the function of the Eurasian transit corridor. On the other hand, most of Russia's territory is located in a zone of low temperatures and severe climatic conditions, which makes it very difficult to conduct profitable economic activity there.

From this perspective, the NSR is a vivid example of how the positive and negative sides of Russia's geographic location are intertwined. The doubtless advantage of the

[5] Development strategy of the AZRF.
[6] Gilpin, "The Challenge of Global Capitalism: the World Economy in the 21th Century".
[7] Haas, E. (1958), "The Uniting of Europe: Political, Social and Economic Forces, 1950–57".
[8] Keohane R., Nye J. Power and Interdependence: World Politics in Transition.
[9] Trejvish, "Rossijskaja geopolitika ot Gostomysla".

NSR is that it is the shortest waterway from North-West Europe to North-East Asia. As an example, the distance from Yokohama (Japan) to London (UK) is 11,400 nm through the Suez Canal and 12,580 nm through the Panama Canal. When passing through the NSR, these distances are reduced to 7200 nm, so the trip is shortened by 58% and 75%, respectively.[10] The NSR usage not only reduces the distance, but also enables ship owners to save fuel and, therefore, to reduce the cost of goods transportation. In turn, the reduction of fuel consumption will have a positive impact on the environment. Besides, the NSR is free of pirates that threaten maritime shipping in the Horn of Africa.[11]

However, there are several factors that reduce the NSR's attractiveness for the international transit of goods, and most of them are directly related to extremely harsh weather conditions. The Arctic is one of the least populated regions of the world, and a place where only limited economic actions can be conducted. The region lacks adequate maritime infrastructure, as well as proper meteorological, navigational and hydrographic support for seafarers. And most important is that the Arctic seas have a seasonally limited navigation period (3–5 months a year).[12]

Nevertheless, for Moscow, the Arctic is a strategically important region. Initially, Russia's key national interests there were defined in 2008 in 'The foundations of the state policy of the Russian Federation in the Arctic up to and beyond 2020' as follows: a) usage of the AZRF as a strategic resource base, allowing for a smooth solution of socio-economic development problems; b) safeguarding the Arctic as a zone of peace and cooperation; c) conservation of the Arctic's unique ecosystems; d) usage of the NSR as a national integrated transport-communication system.[13]

The Russian policy-makers and specialists in international law pay a great attention to the use of law to protect Russia's national interests in the Arctic and shape a legal order in the region to the benefit of Moscow that is interested to promote usage of the NSR for international shipping, but within its own jurisdiction.[14] For example, in 2013 the Government adopted 'The development strategy of the AZRF and national security for the period up to 2020'[15] that called to improve national legislation on the AZRF, including regulations on industrial activities, environmental issues, the NSR, etc. That document clarified development priorities and defined the main activities aimed at realisation of Russia's national interests in the Arctic. The document also provides for a comprehensive build-up of competitive advantages of the AZRF in order to strengthen Russia's position in the region in security and economics. Based on this strategy, we can conclude that Russian policy to develop the AZRF as a whole, and the NSR in particular, is predominantly consistent with principles of 'economic realism' theory.

On 5 March 2020, the Government adopted Executive Order No 164 'Basic Principles of the Russian Federation State Policy in the Arctic to 2035'. The document defines goals, priorities, tasks and mechanisms for implementing Russia's state policy in the region, and

[10] Schøyen and Bråthen, "The Northern Sea Route versus the Suez Canal".
[11] Sevastyanov and Kravchuk, "The Russian Approach to National Security in the Arctic".
[12] Mohov and Hon, "Prodolzhitel'nost' navigacionnogo perioda".
[13] Foundations of the State Policy.
[14] Ibid.
[15] Development strategy of the AZRF.

demonstrates a high level of its continuity. The national interests defined in 2008 in 'Foundations of State Policy' (see above) were complemented in it by two more provisions: a) ensuring the sovereignty and territorial integrity of Russia; b) ensuring a high quality of life and well-being of its Arctic population. As to the NSR, Russia still seeks to develop it as 'a globally competitive national transport corridor'. Basic principles 2035 is primarily focused on solving internal problems, so the Kremlin considers non-compliance with the deadlines for creating the NSR infrastructure, as well as for the construction of icebreaking, rescue and auxiliary fleets, as the major threats to successful implementation of the NSR project. Moscow's overall goal is to provide year-round, safe, regular and cost-effective navigation through the NSR, including trans-Arctic shipping.[16]

The key Arctic actors in Russia are represented by two principal groups – governmental (the president administration, the government, federal executive agencies, regional and local governments, etc.) and non-governmental (interest groups/lobbies, business companies, political parties and associations, think tanks and mass media).

For several decades the NSR management system that gave the Ministry of Transport the right to single-handedly navigate the Arctic sea lanes remained unchanged. However, on 27 December 2018 President Putin signed a law, which established a shared responsibility for the NSR management between the 'Rosatom' and the Ministry of Transport. According to the document, 'Rosatom' gained authority over development and operational control of shipping, infrastructure and sea ports along the NSR, while the Ministry of Transport retained its powers to issue regulations on shipping (including safety and environmental standards), to allow or deny ships' access to the NSR and develop international cooperation, including the Polar Code implementation. It was supposed that this reorganisation will help to fulfill the presidential task to increase annual volume of goods transported through the NSR to 80 million tons by 2024.[17] Moreover, in January 2019 the decision was made to include Arctic issues under the responsibility of the Ministry of the Far East in a move to coordinate the country's expanding development of regional infrastructure and industry. As a result, it was renamed as the Ministry of the Far East and Arctic.

For a long time Russian companies – the largest of which are 'Novatek', 'VostokUgol', 'Norilsk Nickel', 'Rosneft', 'Gazpromneft' and others – were successfully implementing their projects in the region related to extraction of the Arctic resources.[18] However, as a result of the Ukraine crisis, in the first half of 2014 the US and the EU began to apply sanctions against Russia aimed at restricting access of major Russian banks and companies to Western financial resources, and at banning transfer of technologies and equipment to oil and gas giants, such as Gazprom, Rosneft, Novatek, and the like. As a result, those sanctions stopped or 'frozen' several important projects in the AZRF thus slowing down development of the NSR and at least temporarily making it less attractive for international cooperation. To resist Western sanctions against the Russian energy industry, Moscow launched a program of accelerated import substitution, and as a result they have only partially achieved their goals.

[16]. Basic principles 2035.
[17]. Sergunin and Konyshev. "Forging Russia's Arctic strategy".
[18]. Zakvasin, "The Arctic is Close".

Considering Russia's largest oil gas exporters, they resorted to different strategies to counter sanctions. With the start of them, Rosneft and Gazprom decided to cancel or freeze their large-scale projects in the region. However, on 11 February 2020, the head of 'Rosneft' Igor Sechin presented to President Putin the plan to start a large-scale oil project in the Taymyr Peninsula – 'Vostok Oil'. According to Sechin, the resource base of the project is about 5 billion tons of oil, and the total amount of investments is expected to exceed 10 trillion rubles. The company plans to build 15 oil-producing towns, two airfields, a port, about 7800 km of pipelines, 3500 km of electric grid facilities, power generating facilities with total capacity over 2000 megawatts, etc. So, 'Rosneft' restarted developing huge energy cluster in the Arctic, while materials for its construction, as well as oil extraction and processing products will be transported through the NSR.[19]

Before the imposition of sanctions Gazprom had plans to double its Arctic offshore reserves and to launch up to 12 new fields by 2024, however in 2014 it postponed capital intensive projects for offshore gas exploration in the Arctic. Enjoying a monopoly of Russia's pipeline gas exports, Gazprom continued to prioritise them and in December 2019 started first ever pipeline gas deliveries to China by the 'Power of Siberia'. Currently, Gazprom has firm plans to launch second pipeline to China which may reinforce its dependence on Beijing.[20]

Opposite to that, the private gas company Novatek, being from July 2014 under the American sanctions continued to create a powerful infrastructure for gas production and processing in the Arctic and for delivering LNG to Europe and the APR. It includes the construction of several LNG plants, a centre for building large-capacity marine structures, two LNG transhipment hubs, etc. One of the most significant events in 2017 was the launch by 'Novatek' of its first 'Yamal-LNG' plant. Currently 'Novatek' is building a second LNG plant on the Gydan Peninsula under the 'Arctic LNG-2' project. The planned total capacity of this plant is 19.8 million tons of LNG per year (for 'Yamal-LNG' this figure is 16.5 million tons). Overall, gas production growth in the Arctic has been secured by the Russian government's program of the accelerated import substitution, uneven application of sanctions by the US. and the EU, and by strong financial support from China.[21]

In 2019 newly created company 'Rosatom-Cargo' – the subsidiary of 'Rosatom' – presented foreign partners its plans to develop transit container traffic via the NSR within the 'Northern Maritime Transit Corridor' project (NMTC) that received endorsement of the Russian government. Under the NMTC initiative, 'Rosatom' plans to launch the permanent container line utilising a fleet of ice-class container ships with a capacity of 5,000 TEU per each between two hub terminals in the west and east of the NSR. For now, this project is at a preliminary stage, when an assessment is underway to determine the most efficient marketing development strategy for the NMTC. The start of commercial operation of the project is planned for 2027,[22] while 'Rosatom' plans to invest 7 USD billion (50% from VTB bank and 50% from its own funds) to purchase up to 55 ice-

[19] Rossijskaya gazeta. Bet on Taymyr.
[20] Sevastianov and Sokolova. "Russian Gas Companies Strategies in the Asia-Pacific and in the Arctic under Western Sanctions and Selective Government Support".
[21] Ibid.
[22] TASS. Rosatom to Enter Market.

class container ships and upgrade port facilities of Murmansk and Petropavlovsk-Kamchatsky.[23]

Within the framework of the Russian regional policy, the NSR had been assigned the role of a national transport artery,[24] which, above all, should satisfy the transport needs of large companies engaged in resource extraction in the region. That is why over the last decade Moscow has taken a series of measures to improve the transport potential of the NSR, while realisation of many comprehensive and costly projects in this sphere could be considered as manifestation of the Russia's 'economic realism' in the region.

The first priority was to ensure the safety of navigation and provide the required level of emergency preparedness in the AZRF. In the Arctic, Russia has already deployed: two marine rescue coordination centres and three sub-centres under the Transport Ministry authority, and six search-and-rescue stations (SRS) under the Emergencies Ministry authority (four more SRS are to be deployed in the future). Thus, the total number of rescuers in the Arctic has already exceeded 18 thousand people.[25]

Apart from that, by 2017 Russia has modernised its maritime awareness system in the Arctic. As a result, for 1 year the NSR Administration provided: 78 coastal warnings for the Eastern part of the region and 163 for its Western part; 730 issues of analytical and prognostic hydro-meteorological information for the Western part of the NSR and 214 for its Eastern part; and 8 long-term ice forecasts for the route areas with difficult navigation conditions.[26] Since then, the NSR administration has regularly provided seafarers with relevant information.

Another focus of Russia's Arctic policy is the construction of new icebreakers. To implement future projects in the Eastern Arctic, where ice conditions are more severe than in the western part of the region, the country needs nuclear icebreakers. Today, Russia has about 40 icebreakers of various types, only four of which are nuclear (project 10520), and all of them will be decommissioned between the years of 2023 and 2035. According to 'Rosatomflot' estimates, four nuclear icebreakers will be sufficient to implement Russian projects in the Arctic until the year 2020, but by 2023 that number should be increased to six vessels, and after 2026 – to seven.[27]

To replace the Soviet-era nuclear icebreakers, Russia plans to build five LK-60 vessels (project 22220) with a more powerful nuclear power plant (60 MW vs. 55 MW). The first of them ('Arktika') was commissioned in 2020, while construction of two more vessels ('Sibir' and 'Ural') is to be completed by 2021 and 2022, respectively. Due to the 'Ukrainian crisis', the terms of the commissioning have been postponed for almost 3 years for each vessel. Nonetheless, in August 2019 'Rosatom' and JSC 'Baltiysky Zavod' signed a contract on construction of the two remaining ships of the series, which should be built by the end of 2024 and 2026.[28]

Construction of a high-power icebreaker (120 MW) of the project 10510 'Lider' class capable of breaking ice with a thickness of up to 4.1 m will be a real breakthrough in the Arctic shipping. The main purpose of these vessels is to provide year-round navigation to

[23] High North News. Rosatom To Invest $7bn in Arctic.
[24] Foundations of the State Policy.
[25] EMERCOM of Russia. Search and Rescue, and Salvage Formations.
[26] NSR Administration. Summing up Activity.
[27] Zakvasin, "The Arctic is Close".
[28] Atomic-Energy. Rosatom Will Finance Half the Cost.

all regions of the Arctic. The technical design of the nuclear-powered 'Lider' class icebreaker was completed by 'Iceberg' Central Design Bureau (St. Petersburg) in November 2017,[29] but it has taken more than 2 years to find financial resources for the project.

In January 2020 the Russian Government allocated 127.6 billion rubles for the construction of the first icebreaker of the series that is to be built on the facilities of the shipbuilding complex 'Zvezda' at the RFE by 2027.[30] The keels of two more icebreakers of the series are planned to be laid before 2023. The cases of upgrading port facilities of Murmansk and Petropavlovsk-Kamchatcky, as well as placing orders to construct 'Lider' class icebreakers at 'Zvezda', that are tightly integrated with the need to supply growing LNG volumes from the Arctic and to improve shipping conditions of the NSR, are clear examples of how the Russian Government applies the principles of the neofunctionalist theory to develop the AZRF and NSR related infrastructure.

The concept of shuttle transportation along the NSR

Official statistics of freight traffic through the NSR have shown an annual increase in the total volume of goods transported in the AZRF – in 2018 this figure amounted to 20.2 million tons (see Table 1). The constant growth of this indicator has been primarily caused by the intensification of intra-Arctic shipping, since Russia launched several large projects in the Arctic related to resource extraction and processing (such as 'Yamal-LNG', 'Novy Port', 'Arctic LNG-2', etc.).

At the same time, the number of transit passages through the NSR was fluctuating and did not reach significant indicators – the highest number of trans-Arctic voyages on record was in 2013 (71 voyages), after which that figure has fallen sharply (see Table 1). In many respects this decline happened due to the fall in oil prices that made shipping through the Suez and Panama Canals less costly. Besides, Western countries' sanctions have also played role in this process.

For a long time, the main problem in trans-Arctic shipping development along the NSR was related to the fact that Russia had not elaborated an attractive logistics model for effective use of the route. In essence, today Russia offers foreign companies to use its territory (water area) for cargo transportation and provides costly icebreaking services for that. But, as foreign experts note, the territory lacks the necessary infrastructure, not all services are provided there, and climatic conditions are quite dangerous for commercial navigation.[31]

Table 1. The NSR transit statistics.

Year	2011	2012	2013	2014	2015	2016	2017	2018
Volume of transported cargoes (million tons)	–	–	2.9	3.8	5.4	7.48	10.7	20.2
Number of transit passages	41	46	71	31	18	19	27	27

Source: CHNL Information Office. The NSR Transit Statistics; Mintrans. Volume of Cargo Transportation along the NSR.

[29] RIA Novosti. Technical Design of Nuclear-Powered Icebreaker.
[30] Seanews. Russian Government has Allocated 127 Billion.
[31] Verny and Grigentin, "Container shipping on the Northern Sea Route".

In 2017 the 'International code for ships operating in polar waters', which is also known as the IMO Polar Code, entered into force.[32] The document determines that only ice-class vessels, falling under one of the three established categories, can be used in the Arctic. But the total number of ice-class vessels in the world merchant fleet is limited, as the world community has only recently begun to think seriously about the prospects of trans-Arctic shipping. The main trend in the world shipbuilding industry has been the production of large and super-large vessels of various types for transoceanic transportation, most of which are not capable of operating in the Arctic. This factor imposes additional restrictions on trans-Arctic shipping, because the construction of ice-class vessels with technical characteristics meeting the requirements of the IMO Polar Code would require significant financial resources and time.

Given the shortage of vessels that can operate in ice-infested waters, it becomes clear that prolonged utilisation of ice-class ships outside the Arctic Ocean (e.g. while sailing in the ice-free waters of the Pacific or Atlantic Oceans on the path from Asian to European ports and vice versa) is economically unprofitable. Taking this into account, the Russian Government has started searching ways for the most effective usage of ice-class vessels on the NSR. One of them became a plan to create two large logistics hubs at the entrances to the NSR (in its Western and Eastern parts) on the basis of 'non-freezing' ports of Murmansk and Petropavlovsk-Kamchatsky with year-round navigation.[33] The logistic model based on shuttle shipping between two hubs is presented on Figure 1.

According to the authors, the application of the above-mentioned logistical model for shipping by the NSR will ensure a substantial decrease in financial and time losses. Firstly, one of the main shortcomings of the NSR is the need to use icebreaking services, while growing use of ice-class vessels on the NSR will lead to price reduction for them, since for ice-class vessels (e.g. Arc-4) it is almost half of that for conventional ships.[34]

Secondly, ice-class vessels are able to move in ice-covered waters at speeds which exceed those of conventional vessels in the region (with or without icebreaking support). This will result in time savings and, in some ways, cost savings – through reducing fuel consumption. In turn, the lesser fuel consumption will cause positive effect on the environment.

Thirdly, the probability of an emergency situation with a vessel that meets the requirements of the IMO Polar Code is much lower than with a conventional one. This fact will cause the reduction in the insurance fees for shipping along the NSR.

Fourthly, since ice-class ships will navigate only along the NSR, their crews will get a necessary expertise to operate there without ice pilots, which will also lead to slight cost savings.

Fifthly, the application of the logistic model based on shuttle shipping between two Arctic hubs will result in creation of a more predictable timetable for goods transportation, in which the time for the formation and dispatch of convoys will be determined in advance and known to the shippers. The probability of a deviation from this timetable for convoys, consisting only of ice-class vessels, is much lower than for those with conventional ships. In addition, the utilisation of conventional vessels will be also optimised. All

[32] IMO. Polar Code.
[33] Nazipova, "Plan for Test Passages Along the NSR".
[34] NSR Administration. Tariffs for the Icebreaker Escorting.

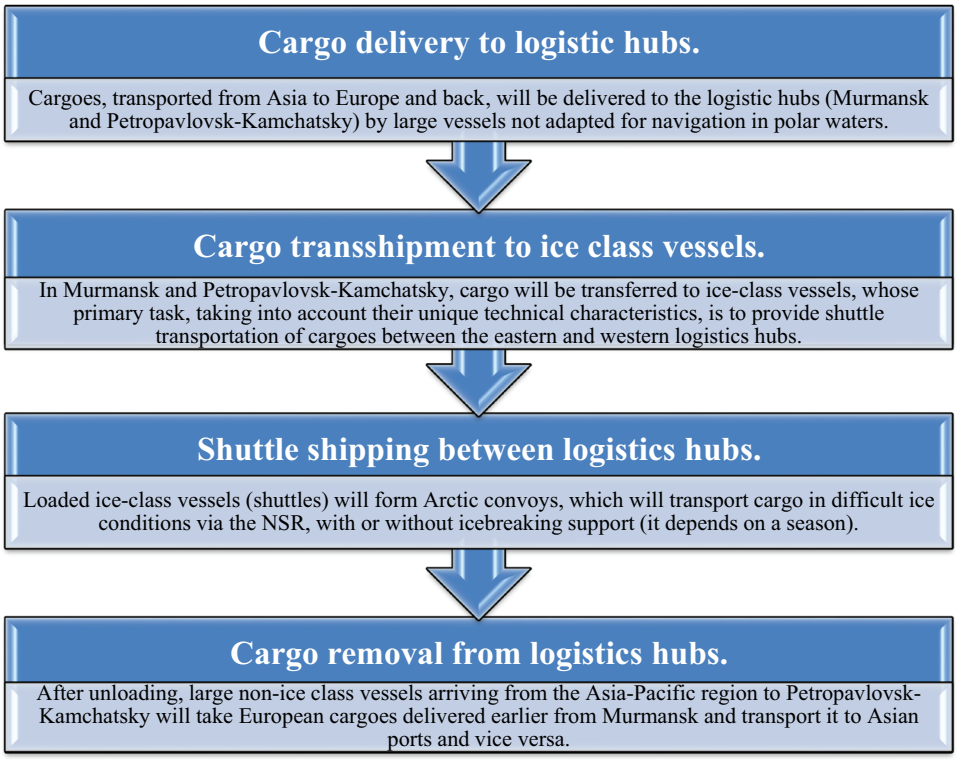
Cargo delivery to logistic hubs.
Cargoes, transported from Asia to Europe and back, will be delivered to the logistic hubs (Murmansk and Petropavlovsk-Kamchatsky) by large vessels not adapted for navigation in polar waters.
Cargo transshipment to ice class vessels.
In Murmansk and Petropavlovsk-Kamchatsky, cargo will be transferred to ice-class vessels, whose primary task, taking into account their unique technical characteristics, is to provide shuttle transportation of cargoes between the eastern and western logistics hubs.
Shuttle shipping between logistics hubs.
Loaded ice-class vessels (shuttles) will form Arctic convoys, which will transport cargo in difficult ice conditions via the NSR, with or without icebreaking support (it depends on a season).
Cargo removal from logistics hubs.
After unloading, large non-ice class vessels arriving from the Asia-Pacific region to Petropavlovsk-Kamchatsky will take European cargoes delivered earlier from Murmansk and transport it to Asian ports and vice versa.

Figure 1. The model of Arctic shipping based on shuttle transportation between two logistic hubs. **Source**: Kravchuk, 'Transportno-Logisticheskie Vozmozhnosti Rossiiskoi Arktiki'.

of this will allow shippers to better predict the process of goods transportation along the NSR, which is crucial for organising container transportation.[35]

Transport-logistic capabilities of Murmansk and Petropavlovsk-Kamchatsky seaports, and the latter's prospective for development

The key characteristics that allow the ports of Murmansk and Petropavlovsk-Kamchatsky to be considered as logistics hubs are their advantageous geographical position and climatic conditions. Both ports are located at the gateways to the NSR (Murmansk – at the western gateway, on the coast of the Barents Sea in the basin of the Arctic Ocean; Petropavlovsk-Kamchatsky – at the eastern gateway, on the coast of the Sea of Okhotsk and the Bering Sea in the basin of the Pacific Ocean).

The effective implementation of the concept of shuttle transportation along the NSR will require both Arctic hubs to have approximately equal logistics capabilities. Unfortunately, a comparative analysis of their characteristics shows a disproportion among them almost in all parameters (see Table 2). The port of Murmansk is one of Russia's largest infrastructure projects. Major construction work is currently ongoing to

[35] Storey, "Russia's Arctic shipping ambitions".

Table 2. Transport-logistic capabilities of Murmansk and Petropavlovsk-Kamchatsky seaports.

Main logistical characteristics of seaports	Murmansk	Petropavlovsk-Kamchatsky
The area of the port's land territory (hectares)	645.9	136.96
The area of the port's water area (square kilometres)	53.7	1792.16
Number of berths	110	56
Total length of the berthing front (metres)	12,956.18	6089.1
The throughput of the port's cargo terminals (thousand tons per year) including:	24,647.2	2060.6
bulk cargo (thousand tons per year)	2800	–
dry cargo (thousand tons per year)	19,100.4	1262
containers (thousand TEU per year)	228.9	66.55
The throughput of the port's passenger terminals (people per year)	141,000	16,000
The maximum dimensions of vessels entering the port (draught, length, width) (metres)	not limited	9/200/25
The area of covered warehouses (thousand square metres)	60.2	32.84
The area of open warehouses (thousand square metres)	247.84	109.9
The capacity of storage tanks for oil products (thousand tons)	76.1	30
Navigation period in the seaport	year-round	year-round

Source: MorFlot. Register of Seaports.

complete the so-called Murmansk Transport Hub which includes new roads, railway, ports and other facilities on the west of the Kola Bay. Murmansk is already a key hub for reloading coal, oil, fish, metals and other cargo exported from the European part of Russia, and it can serve as the main western gateway for the NSR to Asia.[36] The throughput of Murmansk's cargo terminals is almost 12 times higher than of Petropavlovsk-Kamchatsky. The latter also concedes 1.8–2.5 times by the number of berths and their total length, by the area of covered and open warehouses, by the capacity of storage tanks for oil products, etc. Murmansk is the only Russian port capable of accepting ships with deadweight up to 300,000 tons on a year-round basis, while Petropavlovsk-Kamchatsky can accept ships with the deadweight not exceeding 50,000–60,000 tons.

Thus, to implement the concept of shuttle transportation along the NSR, Russia has to take the following measures: at the first stage – to increase transport-logistic capabilities of the port of Petropavlovsk-Kamchatsky to a level more or less comparable to the port of Murmansk; at the second stage – to provide development of transport-logistic capabilities of both hubs, which should be proportional to actual growth of cargo volumes transported through the NSR.

Such a project is very expensive, and Moscow is interested to attract foreign investors for its implementation. President Putin has repeatedly pointed out the need to further improve the legislation in order to support business initiatives and simplify the daily work of entrepreneurs.[37] According to some experts, one of the main tasks of Russia's state policy in the Arctic is to create conditions for investments inflow, renewal of fixed assets and infrastructure.[38]

In practice, the first stage of implementation of the concept of shuttle transportation along the NSR is already underway. The Russian Government has taken measures to increase the investment attractiveness of the port of Petropavlovsk-Kamchatsky: firstly,

[36] Engdahl, "Huge Implications of Russia's Northern Sea Route".
[37] Regnum. Putin: Russia's Political Task.
[38] Konyshev, Sergunin and Subbotin, "Gosudarstvennyj Prioritet — Ustojchivoe Razvitie".

in 2015 the port came under a new preferential regional regime for taxes and investments, as the Government established there a territory of advanced social and economic development (TASED) 'Kamchatka',[39] consisting of nine investment sites, one of which – 'the Seaport' – is directly related to the development of the transport-logistic infrastructure; secondly, in 2016 Petropavlovsk-Kamchatsky was granted the status of a free port (porto-franco regime).[40] As a result, by the end of 2018, about 240 off-budget investment projects with a total amount of private investments of about 216 billion rubles were at different stages of implementation within Kamchatka Region.[41]

In October 2017, 'Novatek' and the Government of Kamchatka Region signed an agreement to construct a floating terminal for LNG transhipment using state support measures introduced by the TASED and free port preferential regimes. The capacity of this terminal (21.7 million tons per year) exceeds the capacity of 'Yamal-LNG' plant (16.5 million tons per year). This fact indicates that the construction of this LNG terminal wood meets the needs not only of 'Yamal-LNG', but also of the 'Arctic LNG-2' project. According to 'Novatek's' chairman Leonid Mikhelson, 'the terminal construction will allow the company: to optimise transport logistics when delivering LNG from the Arctic to consumers in the Asia-Pacific region (APR), to stimulate the usage of the NSR, and, in the future (based on this transhipment terminal) to form a new independent centre for LNG price formation in the APR'.[42]

The LNG terminal utilisation will optimise the work of ice-class LNG-tankers (Yamalmax class) that should transport gas from the 'Novatek's' Arctic LNG plants along the NSR. Yamalmax class ships will unload LNG to the Kamchatka terminal, from where conventional (non-ice class) LNG-tankers will deliver it to consumers in the APR.[43] This scheme, compared with the direct delivery of LNG to the Asia-Pacific region, will reduce the cost of gas transportation by 0.2 USD per one million British thermal units. With the transhipment of 21.1 million tons of LNG, the savings could increase 225 USD million per year.[44]

In March 2019, the Government approved an investment plan for the Kamchatka LNG terminal project (with a total value of 108 billion rubles) that will be implemented within the framework of TASED 'Kamchatka'. The start of the terminal construction is scheduled for 2020, the launch of the first complex is planned for 2022, and the second one – for 2023. "Novatek plans to build a similar LNG terminal in Murmansk, and the order for its construction was signed by the Russian Prime Minister in April 2019. The project cost is estimated at more than 70 billion rubles. The beginning of work is scheduled for 2020, and the end is planned for 2023. When launched, the total capacity of the Murmansk LNG terminal will be 20.9 million tons per year.[45] Thus, the Russian Government supported a more efficient model of operating ice-class vessels on the NSR, and 'Novatek' became the first Russian company that is planning to use the concept of shuttle transportation along the NSR (see Figure 2).

[39] Decree of the Government. On the Creation of the Territory of the Advanced.
[40] Federal Law. On the Free Port of Vladivostok.
[41] Kamchatinfo. More than 240 Off-Budget Investment Projects.
[42] Kam-24. Kamchatka Plans to Build Marine Terminal.
[43] Neftegaz. Novatek and Kamchatka Signed Agreement.
[44] Vedomosti. Construction of Novatek's LNG terminal.
[45] Neftegaz. Novatek's Transshipment Complex.

Figure 2. Logistic scheme for LNG transportation along the NSR.

Debating the NSR limitations

The year of 2017 demonstrated more positive perspective of the Arctic shipping, as the NSR set several records. The first one was for the volume of cargo transported along the NSR – 10.7 million tons, which was an increase of 43% over 2016. In 2018 this figure exceeded 20.2 million tons.[46] The second record was set for the speed of passage through the NSR. In August, the Yamalmax class vessel 'Christophe de Margerie', sailing from Hammerfest (Norway) to Boryeong (South Korea), independently passed the NSR in just 6.5 days. Later, in October, a new record was set when the vessel 'Baltic Winter' sailed from Taicang (China) to Bremerhaven (Germany), passing through the NSR in only 5.6 days.[47]

The third record was set for the latest seasonal independent passage of a merchant ship through the NSR. The vessel 'Eduard Toll' entered the route through the Bering Strait on 25 December 2017, and after 17 days arrived at the Gulf of Ob (the Kara Sea), where nuclear icebreaker '50 Let Pobedy' escorted her to the port of Sabetta.[48]

In 2016 Jeroen Pruyn formulated a list of limitations for the use of the NSR, which included restrictions on a vessel's width (no more than 30 metres), deadweight (not more than 50,000 tons), average speed (up to 11 knots), convoy waiting time (about 4 days), etc.[49] But the above mentioned 'Christophe de Margerie' and 'Eduard Toll' had a width slightly more than 50 metres, and their deadweight was about 97,000 tons.[50] Besides, 'Christophe de Margerie' had an average speed of more than 14 knots despite the fact that she was forced to go through ice fields 1.2 metres thick, and 'Baltic Winter' moved even faster – about 15.5 knots.[51]

It is worth noting that Jeroen Pruyn defined those restrictions of the ship carriers based on the width of the current ice-breakers (about 30 m) and therefore the width of the channel that they can provide in ice conditions. But the passage of 'Eduard Toll' demonstrated that modern vessels of Yamalmax class (about 50 m wide) are able to move

[46] Mintrans. Volume of Cargo Transportation along the NSR.
[47] NSR Administration. Summing up Activity.
[48] Rambler. Tanker "EDUARD TOLL".
[49] Pruyn, "Will the Northern Sea Route ever".
[50] Marine Traffic.
[51] Russia Today. Russian LNG tanker navigates Arctic.

without icebreaker's support during the winter navigation even in the Eastern part of the Arctic. However, we should admit that the vessel's speed was low – about five knots – so in current conditions trans-Arctic shipping during the winter navigation period without icebreaking support is not viable, while the main shortcoming of the NSR which prevents it from becoming a global route is the seasonality of its use.[52]

To solve this critical problem, Russia has started construction of a new class of icebreakers. For example, the 'Lider' class icebreakers will be able to move in ice fields up to 2 m thick at a speed of 15 knots[53] and thus will be able to provide year-round trans-Arctic shipping along the NSR. In addition, 'Lider' class icebreakers create channels in the ice 50 m wide, which allow them to escort vessels with deadweight of about 100,000 tons through the NSR.

International cooperation in the development of trans-Arctic shipping

Lately, foreign companies, especially from China, Japan, and Republic of Korea made serious efforts to strengthen cooperation with Russia in implementation of ongoing and planning of future Arctic projects. The possibility of using the NSR is of particular interest to the export-oriented China, which is seeking a way out of the 'Malacca Dilemma' (today 85% of oil that goes to China from the Middle East and Africa is transported through the Strait of Malacca). The latter is often used by the US. and Southeast Asian countries to conduct joint naval exercises, and in the event of a conflict the Malacca Strait could be easily blocked by a rival nation, cutting off huge Chinese economics from badly needed energy resources.[54] To overcome this dilemma Beijing is compelled to look for more reliable alternative routes for hydrocarbon and other cargo, and, in accordance with recent Chinese strategies, Beijing had firm plans to increase the volume of its traffic through the NSR, and in 2013 expressed hope that by 2020 about 15% of Chinese foreign trade could go through this route.

In 2013 Chinese President Xi Jinping proposed 'One Belt – One Road' (OBOR) initiative, and initially, within its framework, Beijing planned to implement two key projects: the 'Silk Road Economic Belt' (development of the land route from China to Europe via Asia) and the '21st Century Maritime Silk Road' (development of the sea route from China to Europe via India and Africa).[55] Many Russian experts enthusiastically accepted this initiative, believing that Russia could offer China to use the Trans-Siberian Railway (TRANNSIB) and Baikal-Amur Mainline (BAM) for goods transportation. But the Chinese partners were not interested to invest in the development of the Russian railways, and instead considered various options for creating shorter routes through the countries of the South Caucasus (Georgia and Azerbaijan), Central (Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan) and South-Western Asia (Iran and Turkey), most of which will pass by the territory of Russia.

Nevertheless, in May 2017, during the International Forum 'One Belt – One Road', Putin proposed to create a "new global transport configuration in the Eurasian continent by linking the infrastructure projects implemented within the Eurasian Economic Union,

[52] Brigham, "The Arctic waterway to Russia's economic future".
[53] CDB "Iceberg". Nuclear Icebreaker "Leader".
[54] Sevastyanov and Kravchuk, "The Russian Approach to National Security in the Arctic".
[55] Sevastyanov, "China's Integration Projects in Asia-Pacific and Eurasia"

the 'OBOR' and the NSR.[56] Apparently, this proposal aroused substantial interest in Beijing, and on 20 June 2017, China's National Development and Reform Commission and State Oceanic Administration published the 'Vision for Maritime Cooperation under the Belt and Road Initiative',[57] which incorporated the Arctic into China's 'OBOR' Initiative. Moreover, on 4 July 2017, Xi Jinping visited Russia, where the two leaders signed the 'China-Russia Joint Declaration on Further Strengthening Comprehensive, Strategic and Cooperative Partnership'. The document sees the development of the NSR (mentioned in document as the 'Ice Silk Road') as a key area of cooperation between two nations.[58]

Besides, on 26 January 2018 the Chinese Government released its first White Paper on the Arctic entitled 'China's Arctic Policy'. The document confirmed that 'China hopes to work with all parties to build a "Polar Silk Road" through developing the Arctic shipping routes. China encourages its enterprises to participate in the infrastructure construction for these routes and conduct commercial trial voyages to pave the way for their commercial and regularised operation'.[59]

As a result, the greatest practical interest among foreigners to invest in Russian projects in the Arctic has been demonstrated by China who made the largest investments into LNG projects started by 'Novatek'. The division of shareholders in the first one ('Yamal-LNG') had been as follows: 'Novatek' (50.1%), France's 'Total' (20%), China's 'CNPC' (20%) and 'Silk Road Fund' (9.9%). Being under American sanctions, 'Novatek' actively involved Chinese partners in this project (29.9% of its shares has been sold to Chinese companies, plus it received a loan of 12 billion USD from 'Export Import Bank of China' and 'China Development Bank Corp.'). So, Beijing covered a very sizeable portion of the total project cost.[60]

As far as 'Arctic LNG-2', in comparison with 'Yamal-LNG', 'Novatek' decreased the amount of foreign shares in the project from almost 50% to 40%: French 'Total', Chinese 'CNODC' (100% subsidiary of 'CNPC') и 'CNOOC' have acquired 10% each, and a consortium of Japanese companies 'Mitsui' и 'JOGMEC' got 10% of shares. So in the case of 'Arctic LNG-2' 'Novatek' diversified project participants by adding Japanese companies, decreased Chinese and French ownership share by 10% each, and did not borrow from banks relying only on own financial resources. These figures clarify that in a short time 'Novatek's' dependence on Chinese financial resources has significantly decreased.[61] Finally, in June 2019 'Novatek' and 'Gazprombank' signed a legally binding agreement with Chinese petrochemical company 'Sinopec' on formation of a joint venture to sell Russian LNG at China's domestic market. This agreement should guarantee Russian LNG sales in China and open up opportunities for 'Novatek' for the development of final consumption in this largest market.[62]

Besides, On 5 June 2019, Russian 'Sovcomflot' and 'Novatek' companies, along with China 'Silk Road Fund' have signed an agreement with China 'COSCO Shipping' related to transportation of LNG produced at Russia's Arctic projects. The parties intend to

[56] Interfax. Putin Proposed a New Way.
[57] Xinhua. Vision for Maritime Cooperation.
[58] Liu, "China-Russia Trouble on the Arctic".
[59] Xinhua. China's Arctic Policy.
[60] Sevastyanov, Kravchuk, "The Russian Approach to National Security in the Arctic".
[61] Sevastianov, Sokolova, "Russian Gas Companies Strategies in the Asia-Pacific and in the Arctic under Western Sanctions and Selective Government Support ".
[62] Ibid.

establish a long-term cooperation providing for the joint development, financing and implementing year-round logistics arrangements for cargo shipping from the Arctic to the APR. The companies would also organise transit cargo traffic along the NSR between Asia and Western Europe.[63]

Apart from Arctic projects, as of January 2019, China participated in 45 projects in the RFE within the frameworks of TACED and free port regimes. The volume of Chinese investments in them was 2.6 USD billion (63% from total volume of foreign investments), while about 17.8 USD billion has been allocated for 35 future projects.[64] Besides, on 13 June 2019 China's largest construction state corporation 'China Machinery Industry Construction Group Inc.' (SINOCONST) signed a strategic agreement with JSC 'Development Corporation of Kamchatka' that provides for a wide range of cooperation in attracting Chinese capital to the economy of Kamchatka Region. It was also announced, that 'SINOCONST' is ready to invest up to 100 billion rubles in infrastructure facilities of Kamchatka.[65]

The abovementioned examples of Russian-Chinese economic cooperation in the Arctic demonstrate that those bilateral interactions, especially in finance, developing energy resources, the NSR-related ports' infrastructure, transportation capacity, shipbuilding, etc., became very deep and mutually beneficial. Beijing is implementing an active Arctic policy, and in this context its interests coincide in many ways with Moscow. Taking this into account, as well as high level of political cooperation between two countries, we suggest that their interactions in the Arctic have acquired some features of complex interdependence, despite the fact that disagreements between them still exist, for example, on the NSR legal status.

While constructing the Yamal-LNG plant, 'Novatek' proposed several large Japanese companies ('Tokyo Gas', 'Itochu', 'Mitsubishi' and 'Mitsui') to buy shares in this project, but they declined, being apprehensive about a possible American reaction. Nevertheless, other Japanese companies ('JSC Corp.', 'Chiyoda' and 'Yokogawa Electric') won sizeable contracts to provide engineering and other services, including construction of a complex to liquefy natural gas, and 'Novatek' considers Japan among largest consumers of Yamal LNG.[66]

Taking into account that its shipments would be arranged by the NSR, in February 2018 the head of the Japan Bank for International Cooperation (JBIC) Tadashi Maeda announced that the bank has been ready to finance two 'Novatek' projects – 'Arctic LNG-2' and the LNG-terminal in Kamchatka – but only if Russia involves Japanese trading and energy companies in the projects.[67]

Following that, in June 2019 a consortium of 'Mitsui & Co' and 'Japan Oil, Gas and Metals National Corporation' (JOGMEC) acquired 10% equity interest in 'Arctic LNG-2'. Later, in September 2019, 'Novatek', 'Mitsui O.S.K. Lines, Ltd' (MOL) and 'JBIC' signed a cooperation agreement for Kamchatka and Murmansk LNG transhipment projects, which provides for joint investments and acquiring a share in each project by

63. World Maritime News. China COSCO, Russian Majors Ink Arctic.
64. Drobysheva, "Russia and China increase investment".
65. EastRussia. State Corporation from China.
66. Sevastyanov, "Hopes and Realities in Relations Between Russia and Japan: Is a Breakthrough Possible?".
67. Fadeeva and Filipenok, "Japanese State Bank Announced Plans".

Japanese companies.[68] We suggest that this case clearly reflects a 'spill-over effect' explained by Haas in neofunctionalism theory.

In September 2017, during the Eastern Economic Forum (EEF) in Vladivostok South Korean President Moon Jae-in proposed to 'build nine bridges between Korea and Russia for simultaneous and multilateral cooperation' in the sectors of natural gas, railroads, shipping ports, electric power, agriculture and fisheries.[69] One of those 'bridges' is directly related to implementation of joint projects on the NSR development.

In November 2017, while visiting Seoul Alexander Galushka (then the Minister for the Development of the RFE) presented Korean partners a financial and economic model for the development of the NSR, providing full calculations of the investments and revenues from the utilisation of the Arctic container line between logistic hubs in Petropavlovsk-Kamchatsky and Murmansk. According to him, 'the payback period of the project is about 8 years'.[70] The parties agreed to establish a joint working group on the development of the NSR. The Russian delegates were informed that Korea's largest container carrier – 'Hyundai Merchant Marine' (HMM) – had been ready to provide the test loading of the container line along the NSR. HMM is expected to explore the route, using 2,500 to 3,500 twenty-foot equivalent unit (TEU) ships. The trial is to be conducted in 2020, and if successful, HMM plans to use the NSR on a regular basis.[71] Earlier, on 21 October 2017, South Korean shipping liner 'Hyundai Glovis' completed the country's first Arctic voyage to transport 44,000 tons of naphtha between Europe and Asia by the NSR.[72]

In May 2017, Russian company 'NK Rosneft' and Korean 'Hyundai Samho Heavy Industries Co Ltd.' (HSHI) established a joint venture in the sphere of engineering and management – JSC 'Zvezda-Hyundai'. In June 2017, two companies signed an agreement, according to which 'HSHI' is obliged to provide technical support in the design and construction of a series of ice-class, LNG-powered 'Aframax' tankers at 'Zvezda' shipyard.[73] Today 'Zvezda' has orders for building of 12 'Aframax' tankers, five of which are under construction.[74]

Besides, in September 2019 'Rosatom-Cargo' signed a long-term cooperation agreement with the Korea Marine Equipment Research Institute (KOMERI) and the 'Sinokor Merchant Marine' shipping company, providing for the joint development of the 'Northern Maritime Transit Corridor' project. The companies plan to exchange information in order to identify potential areas of cooperation in the field of modernisation and design of ports of the route, as well as the development of sea and feeder transportation from Asia to Europe to increase the energy efficiency of port facilities and introduce digital management technologies.[75] All the above examples of the active participation of Korean companies in several joint projects indicate their interest to use the NSR on the regular basis, and are an example of the neofunctionalism theory-described 'spill-over effect'.

[68] MOL. MOL, JBIC, and NOVATEK Sign Cooperation.
[69] MTRK "Mir". EEF: South Korean Leader Calls.
[70] Vesti PK. Alexander Galushka: "Payback Period of Container Line".
[71] Kang, "Hyundai Merchant Considers Exploring Arctic".
[72] Doe, "South Korea Completes First".
[73] Kravchuk, "Arctic and Development of Far Eastern Cluster of Russian Shipbuilding".
[74] VladNews. Fifth Giant Aframax-Type Tanker.
[75] Neftegaz. Rosatom-Cargo signed agreement.

Recently some European companies also started demonstrating interest to the NSR. In 2018 the Danish company 'Maersk Line' – the world's biggest container shipping company – sent its newly built Arc-4 ice-class container vessel 'Venta Maersk' to transport fish and electronics from Vladivostok to St. Petersburg. 'Maersk Line' spokespersons claimed that it was 'one-off trial passage', and the company 'currently does not see the NSR as a commercial alternative to its existing network'.[76] However, earlier the company purchased seven 'Venta Maersk' class vessels with a capacity of 3,600 TEU for trade with Russia[77] (six of them have already been commissioned). Later, in June 2019, 'Maersk Line' signed a memorandum of cooperation with 'Atomflot' (a subsidiary of 'Rosatom'),[78] and taking this into account it is reasonable to believe that some of those vessels will operate along the NSR.

To support NSR development and exploitation Russia and her foreign partners started several joint projects on the basis of the shipbuilding complex 'Zvezda'. For example, 'Zvezda' has signed a number of contracts with Chinese companies, including: 'China Shipbuilding & Offshore International', 'China Heavy Industry Corporation Nantong', 'Suzhou Dafang Special Vehicle Co Ltd.', 'China Communications Construction Company', etc. Besides, Russia created such joint enterprises, as: 'Zvezda-Keppel Center for Engineering and Technical Design' with participation of 'Keppel Offshore&Marine' (Singapore) and 'MH Wirth' (Norway) for the design of offshore drilling rigs and equipment for them; 'Zvezda Marine Technologies Ltd.' with participation of 'Damen Shipyards Group' (Netherlands) for the design of multifunctional ice-class supply vessels; 'Plant for the production of propeller-steering columns Sapphire' and 'Plant for the production of marine electrical equipment Sapphire' with participation of 'General Electric Company' (USA) for the production of ship equipment. Taking these trends into account, several experts emphasise that, in cooperation with international partners, especially from Northeast Asia, Russia will be able to successfully develop the NSR project.[79]

Conclusions

The development of the NSR is one of Russia's key projects in the Arctic. Initially, Moscow considered the NSR exclusively as a national transport line to ensure the implementation of resource projects in the region. However, an urgent need to organise transportation of growing LNG volumes since 2018 required Moscow to shift its focus to planning and realising measures aimed at the development of the NSR as a global sea line connecting Europe and Asia.

Though Moscow understands that the NSR can never replace the traditional sea routes, it can complement them by filling its own niche in the world market of maritime transport services. Lately, the Russian Government has made systemic efforts to develop the AZRF, which allowed it to propose an economically attractive model for the organisation of cargo transportation through the NSR that provides additional time and cost savings. The above-mentioned logistical model makes it possible to localise the use of all

[76] Independent. Container ship crosses Arctic.
[77] Vedeneeva et al., "Icebreakers got lost in the fog".
[78] TASS. Atomflot and Maersk Line signed a memorandum.
[79] Engdahl, "Huge Implications of Russia's Northern Sea Route"; Liu, "China-Russia Trouble on the Arctic".

available ice-class vessels in the polar waters, using them to transport cargo between two large logistic hubs in the eastern and western parts of the Arctic.

Another requirement for the successful implementation of the NSR is the availability of a sufficient number of ice-class vessels that could provide shuttle shipping between those hubs on a year-round basis. Most likely, Russia, in cooperation with foreign partners, could create a Joint Stock Company – an operator of the trans-Arctic shipping with its own fleet of large ice-class transport vessels that can operate freely (either independently, or as a part of convoys with the support of icebreakers) in the Arctic seas by providing shuttle transportation of cargo between the logistic hubs. Joint projects in shipbuilding have become another area of cooperation in the interests of the NSR, and Russia started several joint projects with foreign partners on the basis of the shipbuilding complex 'Zvezda' in Primorsky Region.

The key Russia's partners in the NSR development so far are represented by companies from Northeast Asia, although the NSR utilisation could also enable European companies to reduce the cost of goods transportation. The parties could also work together to implement economic projects in the western part of the Arctic (for example, on the development of the infrastructure of the Murmansk port, on the construction of ice-class vessels, etc.). The foregoing gives grounds to believe that the project to create an international trans-Arctic shipping corridor could be successfully implemented in the medium-term perspective based on innovative and mutually beneficial transport-logistic schemes and solutions.

Disclosure statement

No potential conflict of interests.

None

ORCID

Sergey Sevastyanov http://orcid.org/0000-0003-0216-2794
Aleksey Kravchuk http://orcid.org/0000-0002-3241-5812

Bibliography

Atomic-Energy. "Rosatom Will Finance Half the Cost of the Construction of the Fourth and Fifth Icebreakers of Project 22220", 21 January 2020, https://www.atomic-energy.ru/news/2020/01/21/100766 (accessed February 16, 2020). (in Russian).

Basic Principles of the Russian Federation State Policy in the Arctic to 2035. http://kremlin.ru/acts/news/62947 (accessed May 16, 2020). (in Russian).

Brigham, L.W. "The Arctic Waterway to Russia's Economic Future." *The Wilson Quarterly*, 2017, https://wilsonquarterly.com/quarterly/into-the-arctic/the-arctic-waterway-to-russias-economic-future/(accessed February 16, 2020).

CDB "Iceberg". "Nuclear Icebreaker "Leader", Project 10510", http://www.iceberg.sp.ru/?portfolio=business-center (accessed February 16, 2020). (in Russian).

CHNL Information Office. "The NSR Transit Statistics", 2020. http://www.arctic-lio.com/nsr_transits (accessed February 16, 2020).

Decree of the Government of the Russian Federation No. 899 of August 28, 2015. "On the creation of the territory of the advanced socio-economic development "Kamchatka"." (In Russian).

Development strategy of the AZRF and national security for the period up to 2020. http://government.ru/docs/22846/(accessed February 16, 2020). (in Russian).
Doe, L. "South Korea Completes First North Sea Route Voyage." Port technology, 26 October 2017, https://www.porttechnology.org/news/south_korea_completes_first_north_sea_route_voyage/(accessed February 16, 2020).
Drobysheva, I. "Russia and China Increase Investment in Joint Projects in Far East and Arctic." Rossijskaya gazeta, 4 November 2019, https://rg.ru/2019/11/04/rf-i-knr-uvelichili-investicii-v-proekty-na-dalnem-vostoke-i-v-arktike.html (accessed February 16, 2020). (in Russian).
EastRussia. "State Corporation from China Is Ready to Invest 100 Billion in Facilities in Kamchatka", https://www.eastrussia.ru/en/news/goskorporatsiya-iz-kitaya-gotova-vlozhit-100-mlrd-v-obekty-na-kamchatke/(accessed February 16, 2020). (In Russian).
EMERCOM of Russia. "Search and Rescue, and Salvage Formations," https://www.mchs.gov.ru/ministerstvo/uchrezhdeniya-mchs-rossii/spasatelnye-podrazdeleniya/poiskovo-spasatelnye-i-avariyno-spasatelnye-formirovaniya (accessed February 16, 2020). (in Russian).
Engdahl, F.W. "Huge Implications of Russia's Northern Sea Route. An Alternative to the Suez Canal?" *Global Research*, 22 November 2017, https://www.globalresearch.ca/huge-implications-of-russias-northern-sea-route-an-alternative-to-the-suez-canal/5619445 (accessed February 16, 2020).
Fadeeva, A., and A. Filipenok. "Japanese State Bank Announced Plans to Finance Two Novatek's Projects." *RBC*, 15 February 2018. https://www.rbc.ru/business/15/02/2018/5a85727d9a794733992935b8 (accessed February 16, 2020). (in Russian).
Federal Law No. 212-FL of July 13, 2015. "On the Free Port of Vladivostok". (In Russian.).
Foundations of the State Policy of the Russian Federation in the Arctic up to and beyond 2020. http://www.rg.ru/2009/03/30/arktika-osnovy-dok.html (accessed February 16, 2020). (in Russian).
Furuichi, M., and N. Otsuka. "Cost Analysis of the Northern Sea Route (NSR) and the Conventional Route Shipping." IAME 2013 Conference, Marseille, France, July 3–5,2013.
Gilpin, R. *The Challenge of Global Capitalism: The World Economy in the 21th Century*. Princeton: Princeton University Press, 2000.
Haas, E. *The Uniting of Europe: Political, Social and Economic Forces, 1950 – 57*. Stanford, CA: Stanford University Press, 1958.
Hansen, C.Ø., P. Grønsedt, C. Lindstrøm Graversen, and C. Hendriksen. "Arctic Shipping: Commercial Opportunities and Challenges." *Frederiksberg: CBS Maritime*, 2016.
High North News. "Rosatom to Invest $7bn in Arctic Shipping to Compete with Suez Canal," 25 November 2019, https://www.highnorthnews.com/en/rosatom-invest-7bn-arctic-shipping-compete-suez-canal (accessed February 16, 2020).
IMO. "Adoption of an International Code of Safety for Ships Operating in Polar Waters (Polar Code)." http://www.imo.org/en/MediaCentre/HotTopics/polar/Pages/default.aspx (accessed February 16, 2020).
Independent. "Container Ship Crosses Arctic Route for First Time in History Due to Melting Sea Ice", 18 September 2018, https://www.independent.co.uk/news/world/europe/maersk-container-ship-arctic-ocean-northern-sea-route-venta-global-warming-a8543431.html (accessed February 16, 2020).
Inozemcev, V. "Absurd Investments: Why the Northern Sea Route May Not Be Useful." *RBC*, 17 August 2015, https://www.rbc.ru/opinions/economics/17/08/2015/55d1c5289a79478f6fee4c6f (accessed February 16, 2020). (in Russian).
Interfax. "Putin Proposed a New Way of Using the NSR", 14 May 2017, http://www.interfax.ru/business/562225 (accessed February 16, 2020). (in Russian).
Kam-24. "Kamchatka Plans to Build Marine Terminal for LNG Transshipment", 24 October 2017, https://kam24.ru/news/main/20171024/53052.html#sthash.YTKwHUrP.dpuf (accessed February 16, 2020). (in Russian).
Kamchatinfo. "More than 240 Off-Budget Investment Projects are Being Implemented in Kamchatka", 19 February 2019, https://www.kamchatinfo.com/svoe_delo/detail/29431/ (accessed February 16, 2020). (in Russian).

Kang, S.W. "Hyundai Merchant Considers Exploring Arctic Routes." The Korea Times, 18 August 2017, http://www.koreatimes.co.kr/www/tech/2017/08/693_234983.html (accessed February 16, 2020).
Käpylä, J., H. Mikkola, and T. Martikainen. "Moscow's Arctic Dreams Turned Sour?" *FIIA Briefing Paper 192*, 2016.
Keohane, R., and J. Nye. *Power and Interdependence: World Politics in Transition*. Boston: Little Brown and Company, 1977.
Konyshev, V.N., A.A. Sergunin, and S.V. Subbotin, "Gosudarstvennyj Prioritet — Ustojchivoe Razvitie Rossijskoj Arktiki [Sustainable Development of the Russian Arctic Is a Priority of the State]," *National Interests: Priorities and Security* 13, no. 3 (348) (2017): 416–30. (In Russian).
Kravchuk, A., "Arktika I Razvitie Dalnevostochnogo Klastera Rossijskogo Sudostroeniya [Arctic and Development of Far Eastern Cluster of Russian Shipbuilding]," *Mirovaya Ekonomika I Mezhdunarodnye Otnosheniya* 63, no. 1 (2019): 88–93. (in Russian). 10.20542/0131-2227-2019-63-1-88-93
Kravchuk, A.A., "Transportno-Logisticheskie Vozmozhnosti Rossiiskoi Arktiki: Sovremennoe Sostoyanie I Perspektivy Razvitiya [Transport and Logistics Capabilities of the Russian Arctic: Current State and Prospects for Development]," *Public Administration* 19, no. 4 (108) (2017): 113–19. (in Russian). 10.22394/2070-8378-2017-19-4-113-119
Lee, S.W., and J.M. Song, "Economic Possibilities of Shipping through Northern Sea Route." *The Asian Journal of Shipping and Logistics* 30, no. 3 (December 2014): 415–30. doi: 10.1016/j.ajsl.2014.12.009.
Liu, M., and J. Kronbak. "The Potential Economic Viability of Using the Northern Sea Route (NSR) as an Alternative Route between Asia and Europe." *Journal of Transport Geography* 18, no. 3 (2010): 434–44. doi:10.1016/j.jtrangeo.2009.08.004.
Liu, N. "China-Russia Trouble on the Arctic Silk Road?" The Diplomat 21 July 2017, https://thediplomat.com/2017/07/china-russia-trouble-on-the-arctic-silk-road/(accessed February 16, 2020).
Lukin, I.F., "Analiz Deiatel'nosti Severnogo Morskogo Puti [Analysis of the Northern Sea Route Activity]." *Vestnik MGTU* 18, no. 3 (2015): 467–75. (in Russian).
Marine Traffic. https://www.marinetraffic.com/ru/ais/details/ships/311000548 (accessed February 16, 2020).
Mintrans. "Volume of Cargo Transportation along the NSR Doubled in 2018 — Up to 20.2 Million Tons]", 26 March 2019, https://www.mintrans.ru/press-center/branch-news/1240 (accessed February 16, 2020). (in Russian).
Moe, A., and Ø. Jensen. *Opening of New Arctic Shipping Routes*. Brussels: Directorate-General for External Policies of The Union, Directorate B, Policy Department, 2010.
Mohov, I.I., and V.C. Hon, "Prodolzhitel'nost' Navigacionnogo Perioda I Ee Izmenenija Dlja Severnogo Morskogo Puti: Model'nye Ocenki [The Duration of the Navigation Period and Its Changes for the Northern Sea Route: Model Estimates]." *Arktika: Jekologija I Jekonomika* 2, no. 18 (2015): 88–95. (in Russian).
MOL. "MOL, JBIC, and NOVATEK Sign Cooperation Agreement for LNG Transshipment Projects in Kamchatka and Murmansk", 27 September 2019, https://www.mol.co.jp/en/pr/2019/19063.html (accessed February 16, 2020).
MorFlot. "Map of Search Areas." http://www.morflot.ru/morskoy_flot/funktsionalnyie_sistemyi_rschs_rosmorrechlota/karta_poiskovyih_rayonov.html (accessed February 16, 2020). (in Russian).
MTRK "Mir". "EEF: South Korean Leader Calls to Build 9 Bridges with Russia", 07 September 2017, https://mir24.tv/news/16266507/vef-glava-yuzhnoi-korei-prizval-navesti-9-mostov-s-rossiei (accessed February 16, 2020). (in Russian).
Nazipova, E. "Plan for Test Passages along the NSR Is to Be Prepared by April]," Ministry for the Development of the Russian Far East, 26 December 2017, https://minvr.ru/press-center/news/11586/(accessed February 16, 2020). (in Russian).
Neftegaz. "Novatek and Kamchatka Signed Agreement on the Establishment of Terminal in the Region for LNG Transshipment", 23 October 2017, https://neftegaz.ru/news/view/166058-NOVATEK-

i-Kamchatka-podpisali-soglashenie-po-sozdaniyu-v-regione-terminala-po-perevalke-SPG.-Eto-tehnologichno-i-dazhe-defitsit-gaza-pokroet (accessed February 16, 2020). (in Russian).
Neftegaz. "Rosatom-Cargo Signed Agreement on Long-term Cooperation with Korean Companies in Development of Northern Maritime Transit Corridor", 4 September 2019, https://neftegaz.ru/news/partnership/484428-rusatom-kargo-podpisal-soglashenie-o-dolgovremennom-sotrudnichestve-s-koreyskimi-kompaniyami-v-oblas/(accessed February 16, 2020). (in Russian).
Neftegaz. "Novatek's Transshipment Complex of Floating LNG Terminals in Murmansk Region Will Be Completed by 2023", https://neftegaz.ru/news/transport-and-storage/445215-spg-terminal-novateka-v-murmanskoy-oblasti-budet-dostroen-k-2023-g/(accessed February 16, 2020). (in Russian).
Nelson, R.M. *U.S. Sanctions and Russia's Economy*. Washington, DC: Congressional Research Service Report. 7-5700, R43895, 17 February 2017.
NSR Administration. "Summing up Activity of Administration NSR for 2017," http://www.nsra.ru/en/glavnaya/novosti/n19.html (accessed February 16, 2020).
NSR Administration. "Tariffs for the Icebreaker Escorting of Ships Rendered by FSUE "Atomflot" in the Water Area of the NSR". http://www.nsra.ru/en/ofitsialnaya_informatsiya/tarrifs_for_icebreaker_escort_atomflot/f79.html (accessed February 16, 2020).
Pruyn, J. "Will the Northern Sea Route Ever Be a Viable Alternative?" *Maritime Policy & Management* 43, no. 6 (2016): 661–75. doi:10.1080/03088839.2015.1131864.
Rambler. "Tanker "EDUARD TOLL" Independently Passed to Yamal", 19 January 2018, https://news.rambler.ru/other/38933102/?utm_content=rnews&utm_medium=read_more&utm_source=copylink (accessed February 16, 2020). (in Russian).
Regnum. "Putin: Russia's Political Task Is to Increase Investments", 27 December 2017. https://regnum.ru/news/2362987.html (accessed February 16, 2020). (in Russian).
RIA Novosti. "Technical Design of Nuclear-Powered Icebreaker "Leader" Is Ready, Rogozin Said", 27 December 2017, https://ria.ru/defense_safety/20171227/1511835218.html (accessed February 16, 2020). (in Russian).
Rossijskaya gazeta. "Bet on Taymyr", https://rg.ru/2020/02/11/putin-pohvalil-arkticheskij-proekt-rosnefti.html (accessed February 16, 2020). (in Russian).
The Russia Today. "Russian LNG Tanker Navigates Arctic Sea Route in Record 6.5 Days," 23 August 2017, https://www.rt.com/business/400620-russia-northern-sea-route-tanker/(accessed February 16, 2020).
Schøyen, H., and S. Bråthen. "The Northern Sea Route versus the Suez Canal: Cases from Bulk Shipping." *Journal of Transport Geography* 19, no. 4 (2011): 977–83. doi:10.1016/j.jtrangeo.2011.03.003.
Seanews. "Russian Government Has Allocated 127 Billion for Icebreaker "Leader"," 17 January 2020, https://seanews.ru/2020/01/17/ru-pravitelstvo-rf-vydelilo-127-mlrd-na-ledokol-lider/(accessed February 16, 2020). (in Russian).
Sergunin, A., and V. Konyshev, "Forging Russia's Arctic Strategy: Actors and Decision-making," *The Polar Journal* 9, no. 1 (2019): 75–93. doi:10.1080/2154896X.2019.1618549.
Sevastianov, S., and E. Sokolova. "Russian Gas Companies Strategies in the Asia-Pacific and in the Arctic under Western Sanctions and Selective Government Support." *Journal of Politics and Law* 13, no. 1 (2020): 66–74. doi:10.5539/jpl.v13n1p66.
Sevastyanov, S., "Integratsionniye Proekty Kitaya V ATR Yi Evrazii" [China's Integration Projects in Asia-Pacific and Eurasia]." *World Economy and International Relations* 60, no. 4 (2016): 5–12. (In Russian).
Sevastyanov, S. "Hopes and Realities in Relations between Russia and Japan: Is a Breakthrough Possible?" *East Asia: An International Quarterly* 34, no. 1 (2017): 39–62. doi:10.1007/s12140-017-9268-z.
Sevastyanov, S., and A. Kravchuk. "The Russian Approach to National Security in the Arctic." *The Korean Journal of Defense Analysis* 29, no. 1 (2017): 131–49.
Soroka, G. "Putin's Arctic Ambitions." The Foreign Affairs, 5 May 2016, https://www.foreignaffairs.com/articles/russia-fsu/2016-05-05/putins-arctic-ambitions (accessed February 16, 2020).

Sputnik International. "Watch Second LNG Tanker with Russian Gas Arriving in Boston," 02 March 2018, https://sputniknews.com/business/201803021062150033-russian-lng-tanker-us-boston-video/(accessed February 16, 2020).
Staalesen, A. "Foreigners Take Lead in Planning of Russia's Second Arctic LNG Project." The Independent Barents Observer, 10 January 2018, https://thebarentsobserver.com/en/industry-and-energy/2018/01/foreigners-take-lead-planning-russias-second-arctic-lng-project (accessed February 16, 2020).
Storey, I. "Russia's Arctic Shipping Ambitions Go off Course." The Straits Times, 16 February 2015, http://www.straitstimes.com/opinion/russias-arctic-shipping-ambitions-go-off-course (accessed February 16, 2020).
TASS. "Atomflot and Maersk Line Signed a Memorandum of Cooperation", 6 June 2019, https://tass.ru/ekonomika/6515561 (accessed February 16, 2020). (in Russian).
TASS. "Rosatom to Enter Market of Commercial Transshipment via Northern Sea Route in 2027", 28 November 2019, https://tass.com/economy/1093735 (accessed February 16, 2020). (in Russian).
Trejvish, A.I., "Rossijskaja Geopolitika Ot Gostomysla Do Nashih Dnej: Kratkij Obzor Idej I Faktov [Russian Geopolitics from Gostomysl to the Present Day: A Brief Overview of Ideas and Facts]," *Znanie-sila* 8 (1995): 5–16. (in Russian)
Vedeneeva, A., A. Dzhumajlo, and J. Barsukov. "*Icebreakers Got Lost in the Fog."* Kommersant, 20 October 2017. https://www.kommersant.ru/doc/3443394?from=doc_vrez (accessed February 16, 2020). (in Russian).
Vedomosti. "Construction of Novatek's LNG Terminal in Kamchatka Will Begin in a Year", 19 March 2019, https://www.vedomosti.ru/business/articles/2019/03/19/796814-spg-terminala-novateka (accessed February 16, 2020). (in Russian).
Verny, J., and C. Grigentin. "Container Shipping on the Northern Sea Route." *International Journal of Production Economics* 122, no. 1 (2009): 107–17. doi:10.1016/j.ijpe.2009.03.018.
Vesti, P.K. "Alexander Galushka: "Payback Period of Container Line between Two Logistic Hubs in Petropavlovsk-Kamchatsky and Murmansk Is about 8 Years", 13 November 2017, http://www.vestipk.ru/?id=40441 (accessed February 16, 2020). (in Russian).
VladNews. "Fifth Giant Aframax-Type Tanker Began to Be Built in Primorye", 14 February 2020, https://vladnews.ru/2020-02-14/167002/primore_nachali (accessed February 16, 2020). (in Russian).
World Maritime News. "China COSCO, Russian Majors Ink Arctic Shipping Deal," 7 June 2019, https://worldmaritimenews.com/archives/278172/china-cosco-russian-majors-ink-arctic-shipping-deal/(accessed February 16, 2020).
Xinhua. "Vision for Maritime Cooperation under the Belt and Road Initiative," 20 June 2017, http://www.xinhuanet.com/english/2017-06/20/c_136380414.htm (accessed February 16, 2020).
Xinhua. "China's Arctic Policy", 26 January 2018, http://www.xinhuanet.com/english/2018-01/26/c_136926498_4.htm (accessed February 16, 2020).
Xu, H., Z. Yin, D. Jia, F. Jin, and H. Ouyang. "The Potential Seasonal Alternative of Asia-Europe Container Service via Northern Sea Route under the Arctic Sea Ice Retreat." *Maritime Policy & Management* 38, no. 5 (2011): 541–60. doi:10.1080/03088839.2011.597449.
Zakvasin, A. "The Arctic Is Close: What Results Did Russia Achieve in Developing the Northern Sea Route." The Russia Today, 28 December 2017, https://russian.rt.com/russia/article/465433-severnyi-morskoi-put (accessed February 16, 2020). (in Russian).